

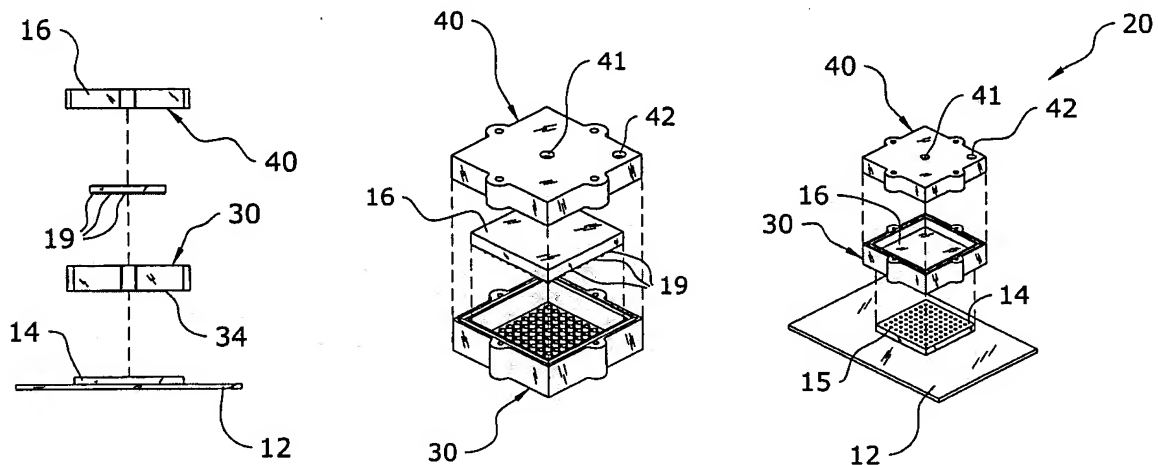
C. APPLICANT'S COMMENTS

i. **Overview**

Claims 1-4, 11-22 are pending in this Application, with Claims 5-10 canceled, with Claims 1, 2, 11, 12, 14, 15, 16, 18, 19, 20 being amended and Claims 23-28 being added to further clarify the invention. No new matter is added by way of these amendments, and the amendments are supported throughout the Specification and the drawings. Reconsideration of Claims 1-4, 11-22 and favorable consideration of Claims 23-28 is respectfully requested.

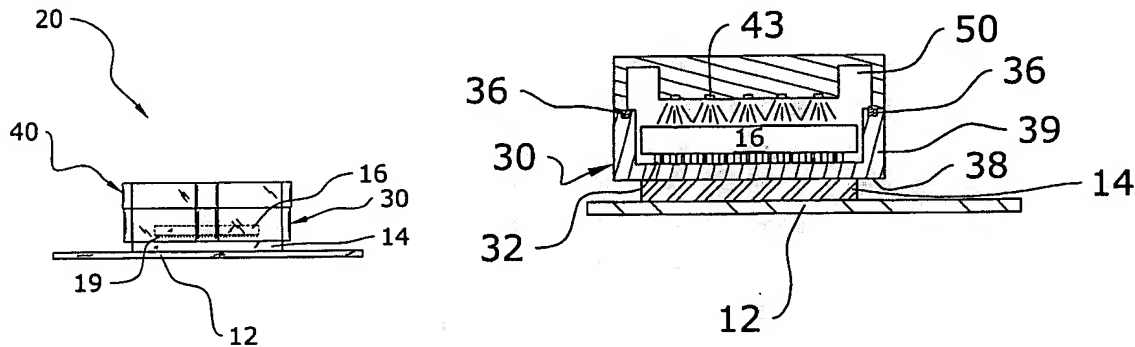
ii. **Present Invention**

The present invention is best illustrated in Figure 6 (see figure below) of the drawings. More particularly, Figure 6 illustrates a thermal management unit having a base portion (30) and a cap member (40) that receives an electronic device (16). The base portion includes a plurality of first connectors (32) that are electrically coupled to the device connectors (19) of the electronic device. The base portion includes a plurality of second connectors (34) that extend outwardly from the base portion to electrically and removably connect to socket receptacles (15) within a socket unit (14) on a board (12).



Figures 2, 3 and 6 of the Present Application

Figures 5 and 7 of the present invention illustrate the present invention when it is removably attached to a socket on a board.



Figures 5 and 7 of the Present Application

iii. Wall et al. (U.S. Patent No. 6,054,676)

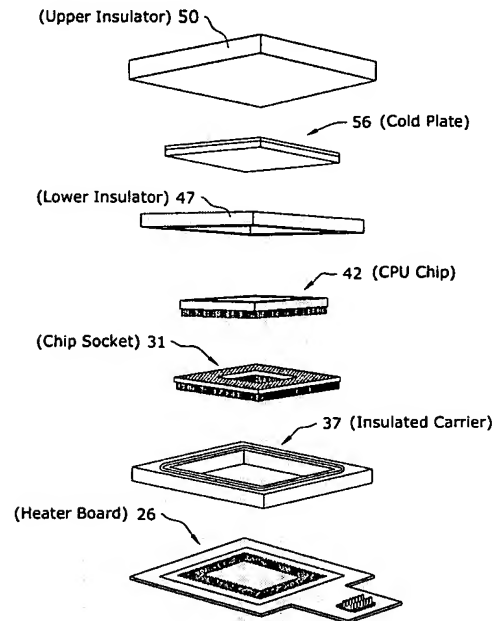
The USPTO Office Action relies solely upon Wall et al. (U.S. Patent No. 6,054,676) to reject as-filed Claims 1-22. Wall teaches a “*method and apparatus for cooling an integrated circuit device*” that includes a heating element that is activated “*to maintain the temperature of exposed ends of the socket pins above a predetermined threshold to prevent moisture condensation on the projecting portions of the pins.*” (Abstract.)

Wall discloses four basic elements:

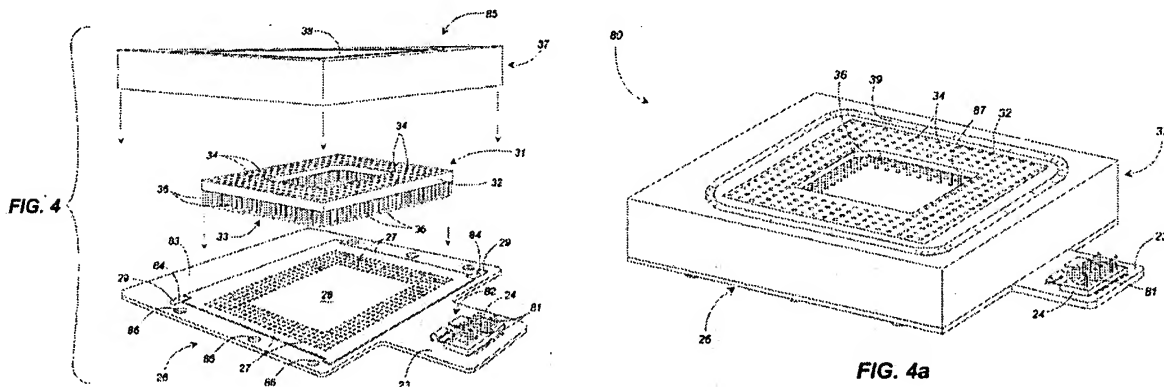
Wall Basic Elements

1. **Heater Board (26);**
2. **Chip Socket (31)** secured to the heater board and mounted to a motherboard, wherein the chip socket receives a **CPU Chip (42)**;
3. **Insulator Housing (37, 47, 50)** secured to the heater board surrounding the chip socket; and
4. **Cold Plate (56)** in thermal communication with the CPU Chip.

Figure 2 of Wall (Redrawn By Applicant)



More particularly, Wall merely teaches a chip socket (31) having a plurality of "socket pins (33) that extend through holes (27) within a heater board (26), wherein the end portions of the socket pins are "mounted to a motherboard or other printed circuit board in the usual way to couple the socket into an electronic circuit." (Column 5, Lines 19-21.) Wall teaches an insulated carrier (37) that has ring structure with an interior rectangular opening (38) that receives the socket and wherein the insulated carrier is "mounted and sealed to the heater board (26) extending about the periphery thereof." (Column 5, Lines 40-43.)



iv. Rejection Under 35 U.S.C. §102(b)

The Official Action rejected as-filed Claims 1, 5-21 under 35 U.S.C. §102(b) as being anticipated by Wall et al. (U.S. Patent No. 6,054,676). The Applicant respectfully disagrees with this rejection for at least the following reasons.

It is important to first briefly discuss 35 U.S.C. §102 and its application to the present application. Under 35 U.S.C. §102(b), anticipation requires that the prior art reference both (1) disclose, either expressly or under the principles of inherency, **every limitation of the claim**, and (2) **be enabling** thus placing the allegedly disclosed matter in the possession of the public.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Hence, under 35 U.S.C. §102, anticipation requires that **each and every element** of the claimed invention be disclosed in the prior art. *W.L. Gore & Assocs. v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1983), **cert. denied**, 469 U.S. 851 (1984). Anticipation also requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, **arranged as in the claim**. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984). In addition, the prior art reference must be enabling, thus placing the allegedly disclosed matter in the possession of the public. *Akzo N.V. v. United States Int’l Trade Comm’n*, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986), **cert. denied**, 482 U.S. 909 (1987) (emphasis added).

Independent Claim 1 has the following features:

1. (Currently Amended) A thermal management socket system, comprising:

a thermal management unit having a chamber, wherein said chamber is capable of receiving at least one electronic device;

a plurality of first connectors within said chamber of said thermal management unit, wherein said first connectors may be electrically coupled with a corresponding plurality of device connectors of at least one electronic device; and

a plurality of second connectors extending from said thermal management unit, wherein said second connectors are electrically coupled to said first connectors and wherein said second connectors may be removably and electrically coupled to a socket on a board.

Independent Claim 14 has the following features:

14. (Currently Amended) A method of utilizing a thermal management unit, said method comprising the steps of:

providing a thermal management unit, wherein said thermal management unit is capable of receiving at least one electronic device; and electrically and detachably coupling said thermal management unit to a socket unit, wherein said socket unit is permanently attached to a board.

Independent Claim 19 has the following features:

19. (Currently Amended) A method of utilizing a thermal management unit, said method comprising the steps of:

providing a thermal management unit, wherein said thermal management unit is capable of receiving at least one electronic device and wherein said thermal management unit is capable of electrically and detachably coupling to a socket unit permanently attached to a board; and positioning and electrically coupling at least one electronic device within said thermal management unit.

First, Wall does not teach a thermal management unit having “a plurality of first connectors within said chamber, wherein said first connectors may be electrically coupled with a corresponding plurality of device connectors of at least one electronic device.” This feature of the present invention allows an electronic device (e.g. microprocessor) to remain enclosed within the thermal management unit during shipping and installation. This configuration also allows for sealing of the thermal management unit for later installation at a work site to avoid contamination of the chamber with air and debris. **To the contrary, the electronic device in Wall directly connects to a socket as illustrated in Figure 2 of Wall et al.** In addition, the

technology in Wall merely illustrates the “mounting” and “sealing” of the insulator housing about a permanently attached socket and therefore there is no “first connectors within said chamber” as disclosed/claimed within the present invention.

Second, Wall does not teach a thermal management unit having “a plurality of second connectors extending from said thermal management unit, wherein said second connectors are electrically coupled to said first connectors and wherein said second connectors may be removably and electrically coupled to a socket on a board.” This important feature of the present invention allows for the entire thermal management along with the electronic device within to be easily removed from the socket of the board and thereby replaced with another thermal management unit with an electronic device. This is important in situations where the electronic device fails or the thermal management unit requires maintenance. The user of the present invention does not have to encounter costly downtime since the entire system can be quickly be brought back online after the replacement of the thermal management. **The technology in Wall simply is not capable of allowing a thermal management unit with an electronic device to be easily removed and replaced.**

The Applicant respectfully submits that Wall does not qualify as appropriate prior art under 35 U.S.C. §102(b) as Wall does not disclose (expressly or inherently) all of the features of independent Claims 1, 14, 19 (or the newly added claims). Therefore, Applicant respectfully submits that independent Claims 1, 14, 19 are patentable over the cited reference for at least these reasons. Accordingly, Applicant respectfully requests that the Examiner withdraw the outstanding rejection as applied to independent Claims 1, 14, 19, since the application is in condition for allowance. Accordingly, dependent Claims 2-4, 11-13, 15-18, 20-22, which depend there from are also in condition for allowance.

v. Rejection Under 35 U.S.C. §103(a)

The Official Action rejected Claims 2-4, 22 under 35 U.S.C. §103(a) as being unpatentable over Wall et al. (U.S. Patent No. 6,054,676) and no other references. The

Applicant respectfully disagrees with this rejection of these claims and expressly incorporates by reference the above-stated arguments into this section.

In proceedings before the United States Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. *In re Bell*, 26 USPQ2d 1529, 1530 (Fed. Cir. 1993). *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). When references cited by the Examiner fail to establish a prima facie case of obviousness, the rejection is improper and will be overturned upon appeal. *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

"To establish a prima facie case of obviousness, three basic criteria must be met." MPEP §706.02(j). First, there must be some **suggestion or motivation**, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a **reasonable expectation of success**. Finally, the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The law regarding *obviousness* is clear -- any modification of the prior art must be suggested or motivated by the prior art. It is submitted that combining elements from different prior art references (in an attempt to establish obviousness) must be motivated or suggested by the prior art.

'Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or

suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so.' [citation omitted] Although couched in terms of combined teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.

In re Fritch, 972 F.2d 1260; 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992), (in part quoting from *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577; 221 USPQ 929, 933 (Fed. Cir. 1984)).

It is also submitted that the mere fact that one may argue that the prior art is capable of being modified to achieve a claimed structure does not by itself make the claimed structure obvious -- there must be a motivation provided by the prior art.

The examiner finds the claimed shape would have been obvious urging that (our emphasis) "it is obvious for one skilled in the art to form each hook base of any desired shape *** since *this is within the capabilities of such a person.*" Thus, the examiner equates that which is within the capabilities of one skilled in the art with obviousness. Such is not the law. There is nothing in the statutes or the case law which makes "that which is within the capabilities of one skilled in the art" synonymous with obviousness.

The examiner provides no reason why, absent the instant disclosure, one of ordinary skill in the art would be motivated to change the shape of the coil hooks of Hancock or the German patent and we can conceive of no reason.

Ex parte Gerlach and Woerner, 212 USPQ 471 (PTO Bd. App. 1980) (emphasis in original).

First, there is **no suggestion or motivation**, either in Wall or in the knowledge generally available to one of ordinary skill in the art at the time, to modify Wall to include a liquid thermal management system comprising spray cooling or liquid immersion. The Official Action provides no evidence to show any suggestion or motivation in Wall or in the knowledge generally available to one of ordinary skill in the art. In fact, the only support within the Official Action for this statement is that "*it has been held to be within*

the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. (Official Action, Page 4.)

However, if the Examiner still is of the position that it would have been obvious to one skilled in the art at the time the invention was made to provide Wall et al. with spray cooling or liquid immersion, the Applicant respectfully requests evidence of the same pursuant to MPEP 2144.03.

Second, there is **no reasonable expectation of success** of modifying Wall et al. for spray cooling or liquid immersion. Wall only discloses the usage of a "cold plate" and an "insulator housing." There is not reasonable expectation of success for modifying Wall to include spray cooling or liquid immersion.


Finally, the Wall does **not must teach or suggest all the claim limitations** as discussed previously. Claims 2-4 depend upon Independent Claim 1 and Claim 22 depends upon independent Claim 19. As discussed previously, these respective independent Claims have features not taught or suggested within Wall.

For these reasons, among others, Wall cannot suggest the combination of features in applicant's Claims 2-4, 22, and it is therefore submitted that the rejection against these claims should be withdrawn and Claims 2-4, 22 allowed.

D. CONCLUSION

In light of the foregoing amendments and remarks, early reconsideration and allowance of this application are most courteously solicited. Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully asked that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. Alternatively should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, they are invited to telephone the undersigned.

Respectfully submitted,



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